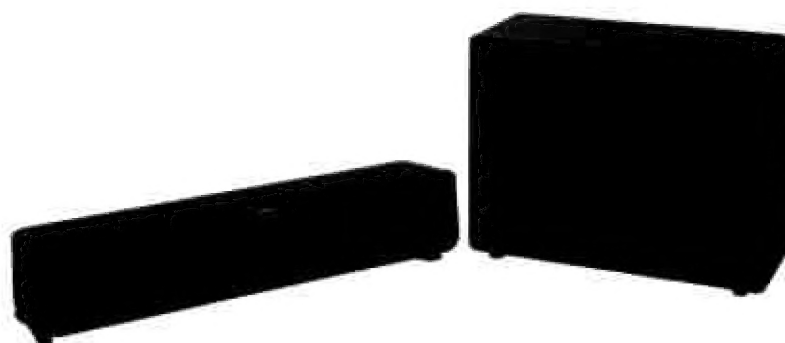


# ONKYO® SERVICE MANUAL

**Virtual Surround Unit**  
**MODEL PHC-5C**

**Dual Driver Subwoofer**  
**MODEL PHC-5SW(MD ONLY)**



BMD	120V AC, 60Hz
BMP	230V AC, 60Hz

## **SAFETY-RELATED COMPONENT WARNING!!**


COMPONENTS IDENTIFIED BY MARK  $\triangle$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

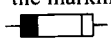
MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.



# SERVICE PROCEDURES

## 1. Replacing the fuse

 This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

 Ce symbole indique le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de meme type. Ce damier est indique la qu le present symbole est appose.

## 2. Safety-check out (Only U.S.A. model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer. Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel. Specifications : 3.3M ohm  $\pm$ 10% at 500V.

PHC-5C		
CIRCUIT No.	PART No.	DESCRIPTION
F901	252159	2A-UL/T-237 <D>
F901	252070	1A-SE-EAK <P>
PHC-5SW		
CIRCUIT No.	PART No.	DESCRIPTION
F904	252159	2A-UL/T-237 <D>

NOTE: <D> : 120V model only  
<P> : European model only  
<T> : Asian model only  
<W> : Worldwide model only  
<R> : Chinese model only  
<A> : Australian model only

## SPECIFICATIONS

### PHC-5 SW (SUBWOOFER)

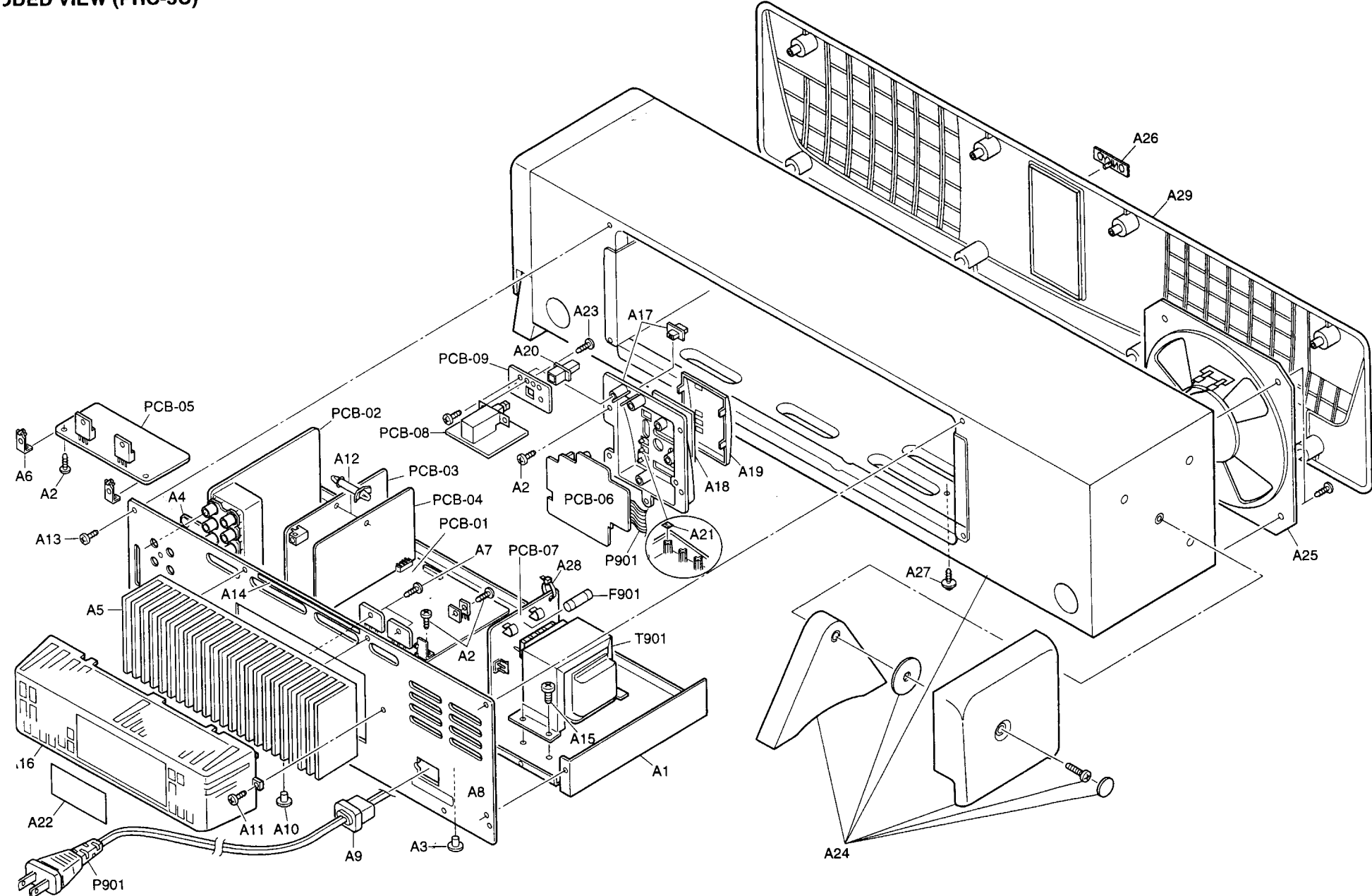
Power output	50 Watts min.RMS. into 6 ohms at 50 Hz with no more than 5% total harmonic distortion.
Dual drive woofer	6.5"x 2 (16cm x 2)
Bass reflex System	
Power supply rating	AC 120V, 60Hz
Dimensions	18 11/16"W x 13 1/2"H x 8 1/4"D (457W x 343H x 209D mm)
Weight	24.0 lbs (10.9 kg)

### PHC-5(CENTER UNIT)

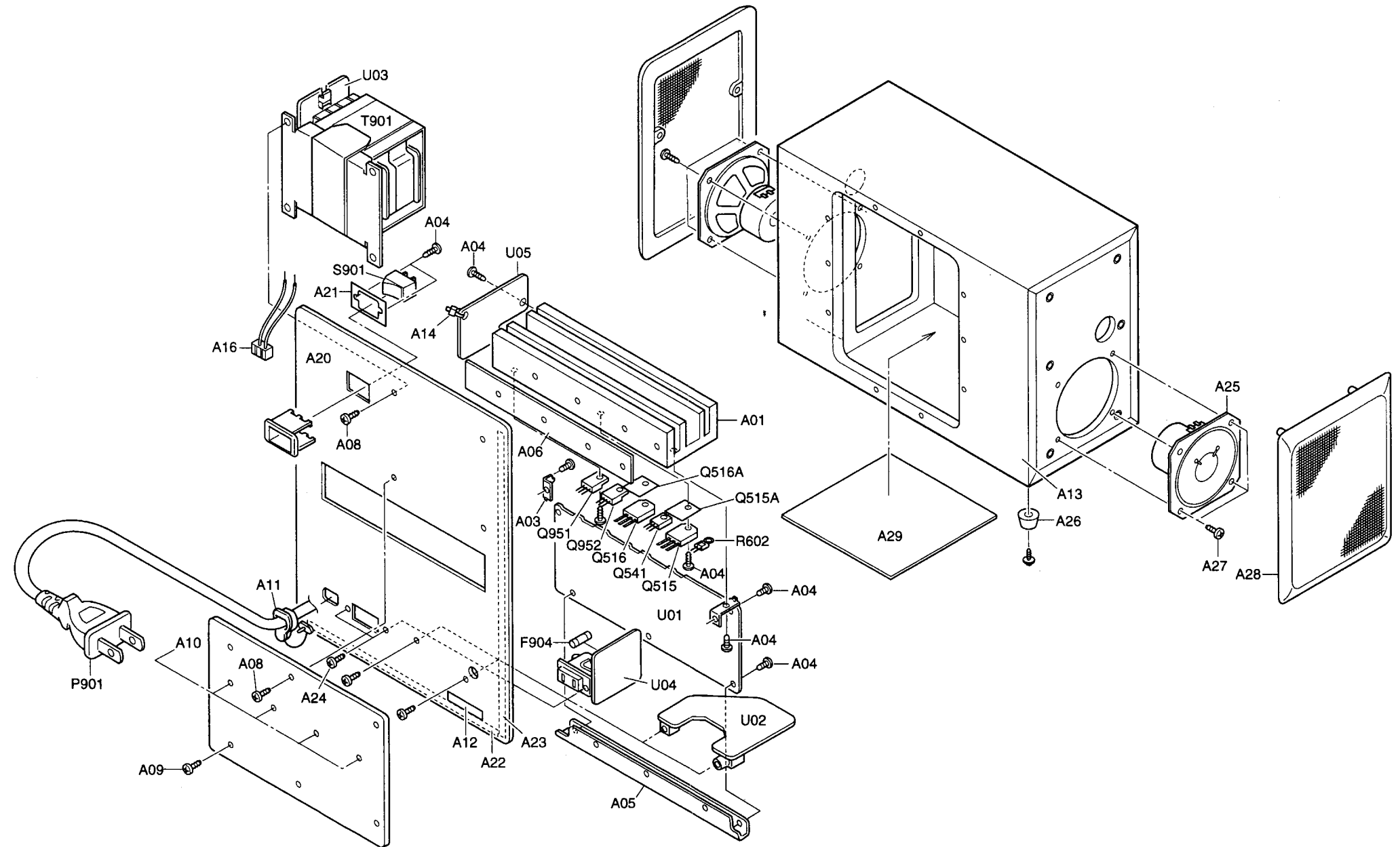
Power output	Continuos Average Power Output
Input sensitivity and impedance	30 W x 2 at 6 ohms min. RMS. both channel driven from 100 Hz to 20 kHz no more than 5% THD.
	38W x 2 at 6 ohms (EIA)
LINE (TV,VIDEO,AUX)	200mV , 50k ohms
OMF cone speaker size	4"x 2 (10cm x 2)
Power supply rating	AC 120V, 60Hz
Dimensions	25" W x 5 3/16" H x 8 1/8" D (634W x 131H x 206D mm)
Weight	14.6 lbs (6.6 kg)

Specifications and external appearance are subject to change without notice because of product improvements.

EXPLODED VIEW (PHC-5C)



EXPLODED VIEW (PHC-5SW)



# PARTS LIST(PHC-5C)

REF. No.	PARTS No.	DESCRIPTION
A1	27100367B	Chassis
A2	838130088	3TTB+8B Self tapping screw
A3	27190428-1	LSR-10R Holder
A4	28141387	Cushion
A5	27160424A	Heat sink
A6	27141729	(S) Retainer
A7	801433	3SMS8W.SW+14B(BC) Screw
A8	27122524C	MJ/MP Rear panel <MP>
A8	27122523B	MD Rear panel
A9	27300750	⚠ S-RELIEF #2271 Bushing
A10	27190813	KGPS-10RF Holder
A11	838430088	3TTB+8B(BC) Self tapping screw
A12	27190062	KGLS-12S Holder
A14	28141388	Cushion <MP>
A15	830440089	4TTC+8C(BC) Self tapping screw
A16	28184749A	(Heat sink) Cover
A17	27191064A	(KNOB) Holder
A18	28133383B	B Plate
A19	28191841	Clear plate
A20	28325639	(Power) Knob
A21	28141390	Cushion
A22	29362402	(Safety) Label <MP>
A23	838430107	3TTB+10S(BC) Self tapping screw
A24	28110761	Cabinet AS
A25	PD10410A	10cm Speaker
A26	MK391A	ONKYO logo batch
A27	837440169	4TTT+16C(BC) Self tapping screw
A28	260208	Binder(CLAMPER)UL
A29	28120385	(CENTER) Net AS
A30	28175248	(PT) ISO plate. Only use the <MP>
A31	28175249	(Power SW.) ISO plate. Only use the <MP>

REF. No.	PARTS No.	DESCRIPTION	
F901	252070	⚠ 1A-SE-EAK FUSE <MP>	
F901	252159	⚠ 2A-UL/T-237 FUSE <MD>	
P801	2045242512	NCFC5-242512 Flexible flat cable	
P901	253271HIT	⚠ AS-UC-6#18 Power cord <MD>	
P901	253193HIT	⚠ AS-CEE Power cord <MP>	
T901	2301363	⚠ NPT-1353D Power transformer	N
T901	2301390	⚠ NPT-1361P Power transformer <MP>	N
N PCB-01	1A819553-1A	NAAR-6453-1A Power supply PC board ass'y <MD>	N
N PCB-02	1A819554-1A	NAAF-6454-1A Input circuit PC board ass'y <MD>	N
PCB-03	1A819555-1A	NADG-6455-1A DSP circuit PC board ass'y <MD>	N
PCB-04	1A819556-1A	NAAF-6456-1A Volume circuit PC board ass'y <MD>	N
PCB-05	1A819557-1A	NAAF-6457-1A Power amplifier PC board ass'y <MD>	N
PCB-06	1A819558-1A	NADIS-6458-1A Display circuit PC board ass'y <MD>	N
PCB-07	1A819559-1A	NAETC-6459-1A Transformer PC board ass'y <MD>	N
PCB-08	1A819560-1A	NASW-6460-1A Power switch PC board ass'y <MD>	N
PCB-01	1A819553-3B	NAAR-6453-3B Power supply PC board ass'y <MP>	N
PCB-02	1A819554-3B	NAAF-6454-3B Input circuit PC board ass'y <MP>	N
N PCB-03	1A819555-3B	NADG-6455-3B DSP circuit PC board ass'y <MP>	N
PCB-04	1A819556-3B	NAAF-6456-3B Volume circuit PC board ass'y <MP>	N
PCB-05	1A819557-3B	NAAF-6457-3B Power amplifier PC board ass'y <MP>	N
PCB-06	1A819558-3B	NADIS-6458-3B Display circuit PC board ass'y <MP>	N
PCB-07	1A819559-3B	NAETC-6459-3B Transformer PC board ass'y <MP>	N
PCB-08	1A819560-3B	NASW-6460-3B Power switch PC board ass'y <MP>	N

N

N

NOTE: THE COMPONENTS IDENTIFIED BY MARK  
 ⚠ ARE CRITICAL FOR RISK OF FIRE AND  
 ELECTRIC SHOCK. REPLACE ONLY WITH  
 PART NUMBER SPECIFIED.

## PARTS LIST(PHC-5C)

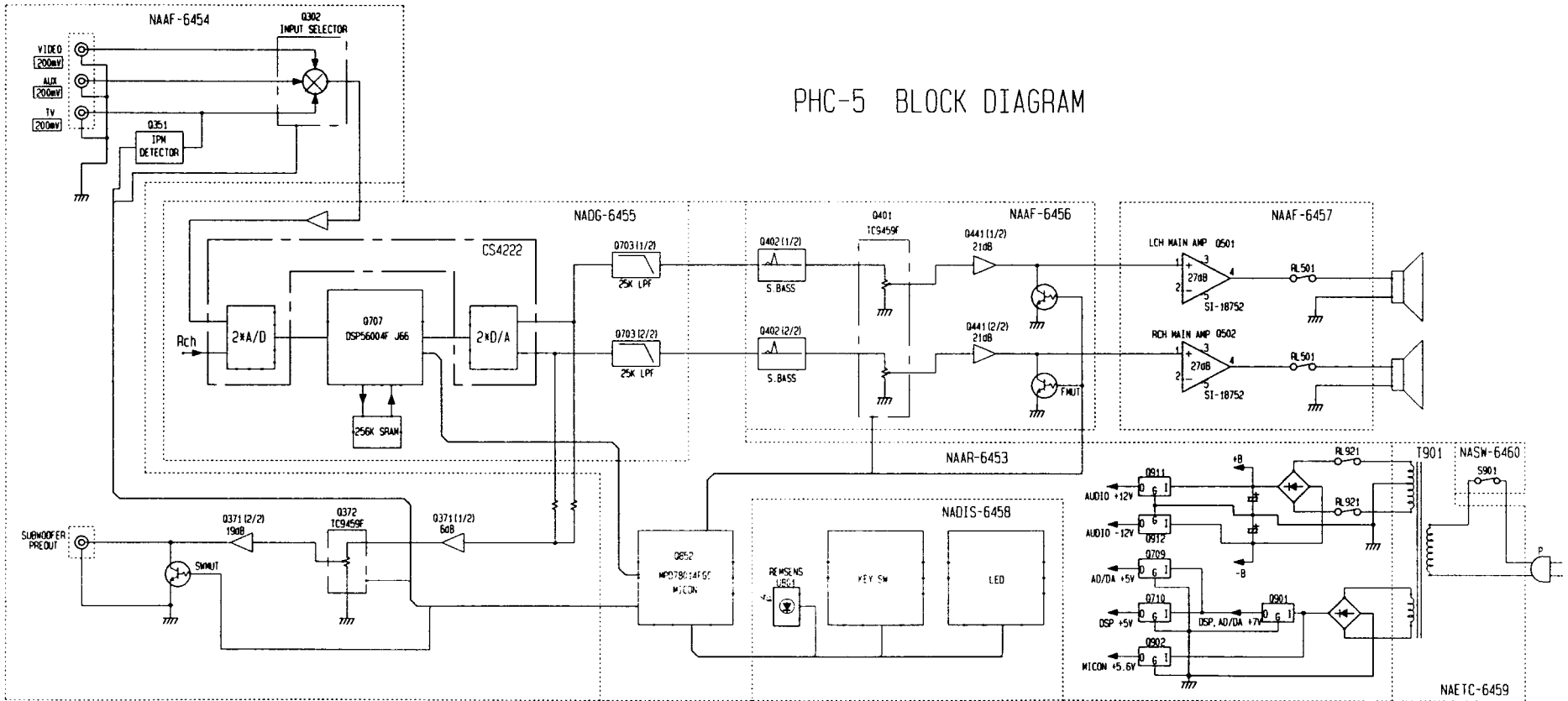
CIRCUIT No.	PART No.	DESCRIPTION	CIRCUIT No.	PART No.	DESCRIPTION
<b>Power supply PC board ass'y(NAAR-6453)</b>			<b>Capacitors</b>		
	<b>Transistors</b>		C382,C485,C856	354741009	CE04W16V-10M Electric.
Q374,Q410	2213510 or	DTA114ES or	C851,C854	354721019	CE04W6.3V-100M Electric.
Q374,Q410	2214350 or	RN2202 or	C852,C853	3000076 or	EECS5R5T104 or
Q374,Q410	2215770	KRA102M		375524744	MMT50V-474J Plastic
Q375 or	2213631 or	RN1241-A or	C855	354780109	CE04W50V-1M Electric.
Q375	2213632	RN1241-B	C913	354761019	CE04W35V-100M Electric.
Q411,Q412	2213632 or	RN1241-B or	C914,C917	354744729S	CE04W16V-4700M
	2213631	RN1241-A	C916,C919,C929,	354741009	CE04W16V-10M Electric.
Q801-Q807,	2213290 or	DTC114ES or	C930		
Q851, Q853	2214230 or	RN1202 or	C921-C923,C931	374721034	ECQ-B50V-103J
	2215960	KRC102M	N C924	374731044	ECQ-V100-104J Plastic(TF)
Q921	2213640 or	DTC123JS or	C925,C926	3504312	CE04W40V-4700M
Q921	2214660 or	RN1205 or	C925A,C926A	27270421	(C) Cover of capacitor
Q921	2215830	KRC105M	C927,C928	354781009	CE04W50V-10M Electric.
	<b>Ics</b>			<b>Others</b>	
Q441	22240581R0	NJM4565M	X851	3010239	CST10.0MTW Ceramic
Q852	22241283	MPD78012FGC-621	N RL921	25065537	NRL-2P5A-DC12-107
Q901	222780075	78M07HF	L851	231237K470R	NCH-1479 Choke coil
Q901A	27160220	HEAT-SINK(RAD-51(B))	JL502B	25051112	NSCT-8P899 Wire holder
Q901B	82143010	3P+10FN(BC) tapping screw	JL901B	25050268	NSCT-4P96 Socket
Q902	222780565JR	78M56(NJM78M56FA)	JL902B	25050267	NSCT-3P95 Socket
Q911	222780125	78M12HF	E901	27141059	Retainer(Ground)
Q911A	27160220	HEAT-SINK(RAD-51(B))	<b>Input circuit PC board ass'y(NAAF-6454)</b>		
Q911B	82143010	3P+10FN(BC) tapping screw		<b>Ics</b>	
Q912	222790125	79M12HF	Q301,Q311,Q321	22240581R0	NJM4565M
Q912A	27160220	HEAT-SINK(RAD-51(B))	Q302	222840521R0	4052BF(TC4052BF)
Q912B	82143010	3P+10FN(BC) tapping screw	Q351,Q371	22240581R0	NJM4565M
	<b>Resistors</b>		Q372	22241220R0	TC9459F
R856,R921	443523914	RS1/2WBJ-390 Metal oxide.		<b>Transistors</b>	
R901	453532294	RNU1/2WCJ-0.22 Metal R.	Q373	2213631 or	RN1241-A or
R901	4500233	RNU1/4WK-0.22 Metal <MP>	N	2213632	RN1241-B
R902	443521004	RS1/2WBJ-10 Metal oxide.		<b>Diodes</b>	
R902	4500179	RNU1/4WJ-10 Metal <MP>	N C383	354784799	CE04W50V-0.47M Electric.
R912,R914-R916	443524704	RS1/2WBJ-47 Metal oxide.	D301,D302	224490620R0	UDZ6.2B Zener
R915	443525604	RS1/2WBJ-56 Metal oxide <MP>	D351,D352,D371	223234R0	1SS352
R916	443525604	RS1/2WBJ-56 Metal oxide <MP>		<b>Resistors</b>	
R921	443522714	RS1/2WBJ-270 Metal oxide <MP>	R331,R332	443523314	RS1/2WBJ-330 Metal oxide.
R922	443521804	RS1/2WBJ-18 Metal oxide <MP>		<b>Capacitors</b>	
R931	4500233	RNU1/4WK-0.22 Metal <MP>	N C357	354721019	CE04W6.3V-100M Electric.
	<b>Sockets</b>		C378	354724719	CE04W6.3V-470M Electric.
P304	25051236	NSCT-11P1026 Socket	C303,C304,C313,C314	354741009	CE04W16V-10M Electric.
P801B	25051982 or	NSCT-24P1769 or	C323,C324,C331,C332	354741009	CE04W16V-10M Electric.
	25051776	NSCT-24P1563 Socket	C351-C353,C356	354741009	CE04W16V-10M Electric.
	<b>Plugs</b>		C372,C373,C376	354744709	CE04W16V-47M Electric.
P303B	25055702	NPLG-6P658 Plug	C380	354744709	CE04W16V-47M Electric.
P304B	25055707	NPLG-11P663 Plug	C355	374721034	ECQ-B50V-103J
P401B	25055702	NPLG-6P658 Plug	C381	374723324	ECQ-B50V-332J
P402B	25055703	NPLG-7P659 Plug		<b>Others</b>	
P701B	25055704	NPLG-8P660 Plug	E803	27150434	(J) Shield plate
P702B	25055707	NPLG-11P663 Plug	P301	25045300	NPJ-6PDBL159 Jack
	<b>Coils</b>		P302	25045302	NPJ-1PDBL161 Jack
D404,D851-D855	223234R0	1SS352	P303	25051231	NSCT-6P1021 Socket
D856	224490620R0	UDZ6.2B Zener			
D901-D909	22380260	RL1N4003			
	22380032 or	1SR139-100 or			
	22380035 or	GP104003E or			
D910,D921	223234R0	1SS352			
D911	22380285F or	RS403M or			
	22380022F	RBV402			
D911A	27160166	HEAT-SINK(DX-200)			
D911B	82143010	3P+10FN(BC) Tapping screw			
D921	3000078	DX-5R5L104			

NOTE: THE COMPONENTS IDENTIFIED BY MARK  
△ ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK. REPLACE ONLY WITH  
PART NUMBER SPECIFIED.

CIRCUIT No.	PART No.	DESCRIPTION	CIRCUIT No.	PART No.	DESCRIPTION
<b>DSP circuit PC board ass'y(NADG-6455)</b>			<b>Power amplifier circuit PC board(NAAF-6457)</b>		
	<b>ICs</b>			<b>ICs</b>	
Q701-Q703	22240053R0	NJM4558M	Q501,Q502	22240383S	SI-18752LF907
Q704	22241128R9	CS4222-KS		<b>Transistors</b>	
Q705	222740046R0	74HCU04(TC74HCU04F)	Q511	2213640 or	DTC123JS or
Q706	22241126R9	TC74HC4040AF		2214660 or	RN1205 or
Q707	22240940R3	DSP56004FJ66		2215830	KRC105M
Q708	22241207R9	M5M5256DPF-55L or	Q512,Q513	2213284 or	2SC1740S-R or
	22241208R9	LH52266CN-70LL or		2212115	2SC2458-GR
	22241108R9	M5M5256DFP-70L	N Q514	2213510 or	DTA114ES or
Q709,Q710	222780053	78L05		2215770 or	KRA102M or
	<b>Diodes</b>			2214350	RN2202
D701-D703,D705	223234R0	1SS352		<b>Diodes</b>	
D704	224490620R0	UDZ6.2B Zener	D501	223234R0	1SS352
	<b>Capacitors</b>		D502	224490510R0	UDZ5.1B Zener
C701,C702,C725,C726	354741009	CE04W16V-10M Electric.		<b>Capacitors</b>	
C727-C730,C756,	354741009	CE04W16V-10M Electric.	C501,C502	354741009	CE04W16V-10M Electric.
C757					
C760			C507,C508	354743319	CE04W16V-330M Electric.
C740	354741019	CE04W16V-100M Electric.	C509-C512	374732734	ECQ-V100-273J Plastic(TF)
C707,C708	374722224	ECQ-B50V-222J Plastic(TF)	C513-C516	354761019	CE04W35V-100M Electric.
C713-C716	374721824	ECQ-B50V-182J Plastic(TF)	C521	374721044	ECQ-V50V-104J
C717-C720	374722224	ECQ-B50V-222J Plastic(TF)	C522	354722219	CE04W6.3V-220M Electric.
C733,C736,C742	354721019	CE04W6.3V-100M Electric.	C523	354780109	CE04W50V-1M Electric.
C735,C747,C749	375524744	MMT50V-474J Plastic		<b>Resistors</b>	
C746	374722234	ECQ-B50V-223J Plastic(TF)	R509	453530224	RNU1/2WCI-2.2 Metal R.
	<b>Coils</b>		R510	453530224	RNU1/2WCI-2.2 Metal R.
L701-L705	231237K470	NCH-1479 Choke coil		<b>Others</b>	
L706	230921R0	BLM21B222SPT Choke coil	RL501	25065517	NRL-2P5A-DC24-098
L708,L709	231237K470	NCH-1479 Choke coil	JL501B	25055627	NPLG-6P589 Wire trap
	<b>Others</b>		JL502	8J100606H	JL8 100 H Jumper lead
P701A	25051233	NSCT-8P1023 Socket	JL502A	25050272	NSCT-8P100 Socket
P702A	25051236	NSCT-11P1026 Socket	P503A	25055165	NPLG-2P149 Plug
P703	25055042	NPLG-3P32 Plug	P504A	25055165	NPLG-2P149 Plug
X701	3010278	CST12.2MTW040 Cera. lock		<b>Display circuit PC board(NADIS-6458)</b>	
E801	25065425	NEGITANSI M3		<b>Diodes</b>	
<b>Volume circuit PC board(NAAF-6456)</b>			D810-D817	225137DG or	SEL2413E-DG or
	<b>ICs</b>			225137CG	SEL2413E-CG LED
Q401	22241220R0	TC9459F	D801-D809	225141	SEL2213C LED
Q402,Q405,Q406	22240581R0	NJM4565M	D801A	27191067A	(ST) Holder N
	<b>Transistors</b>		D802A	27191065	(INP) Holder N
Q407 or	2213631 or	RN1241-A or	D809A	27191069	(LEV) Holder N
Q407	2213632	RN1241-B	D810A	27191066	(DIS) Holder N
Q408 or	2213631 or	RN1241-A or	D811A	27191068A	(WID) Holder N
Q408	2213632	RN1241-B		<b>Capacitors</b>	
Q409 or	2214350 or	RN2202 or	C803	355741009	CE04W16V-10M Electric.
Q409	2213510	DTA114ES		<b>Switches</b>	
	<b>Capacitors</b>		S801-S804	25035652	NPS-111-S604 Switch
C401,C402,C421,C422	354744709	CE04W16V-47M Electric.		<b>Remote sensor</b>	
C429,C430,C447,C448			U801	241329	PIC-26043TH2 Remote
C403,C404	354742209	CE04W16V-22M Electric.		<b>Others</b>	
C413,C414	374726834	ECQ-V50V-683J Plastic(TF)	P801A	25051804	NSCT-24P1591 Socket
C415,C416	354784799	CE04W50V-0.47M Electric.	<b>Transformer PC board(NAETC-6459)</b>		
C417,C418	374721544	ECQ-V50V-154J Plastic(TF)	C902	3500077	DE7150F-472M IS
C427,C428	354741019	CE04W16V-100M Electric.	F901A	25050065	YSH403T Fuse holder
C441,C442	354780229	CE04W50V-2.2M Electric.	JL901	4J100606H	JL4 100 H Jumper lead
C443,C444	374724744	ECQ-V50V-474J Plastic(TF)	JL901A	25051108	NSCT-4P895 Wire holder
C445,C446	374721244	ECQ-V50V-124J Plastic(TF)	JL902	3J100606H	JL3 100 H Jumper lead
C460	354780109	CE04W50V-1M Electric.	JL902A	25051107	NSCT-3P894 Wire holder
	<b>Others</b>		P901A	25055675	NPLG-2P631 Plug
JL501	6J100606B15	JL6 100 B(7-7) Jumper lead	P902A	2009990531U	NSAS-2P0696 Socket AS N
JL501A	25051090	NSCT-6P877 Wire holder	<b>Power switch PC board(NASW-6460)</b>		
P401A	25051231	NSCT-6P1021 Socket	C901	3500191	DE7150F-103M IS
P402A	25051232	NSCT-7P1022 Socket	C902A	27301216	SB1925A C cover
			P902	25055676	NPLG-2P632 Plug
			S901	25035550	NPS-111-L512P Power

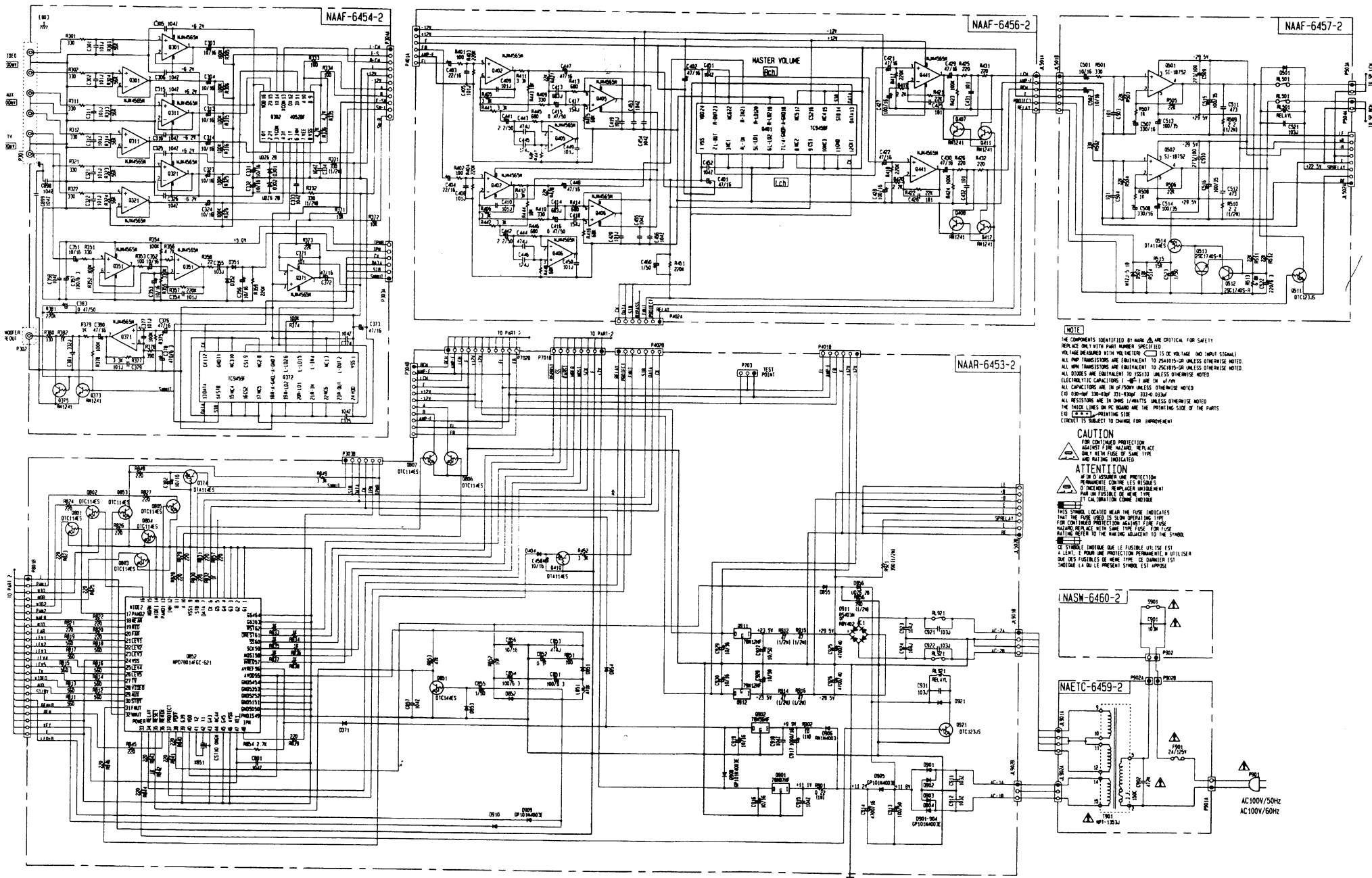
# BLOCK DIAGRAM

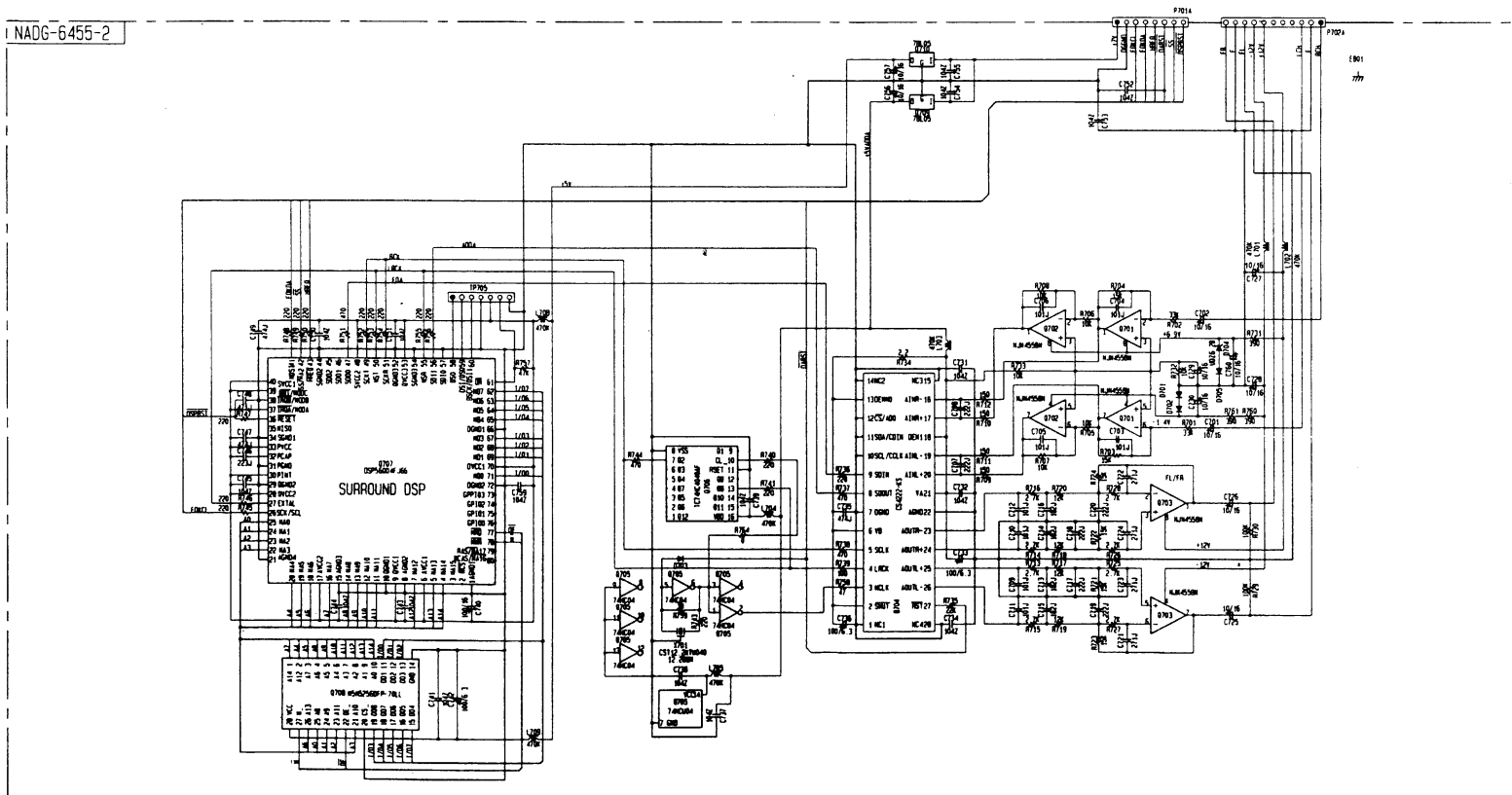
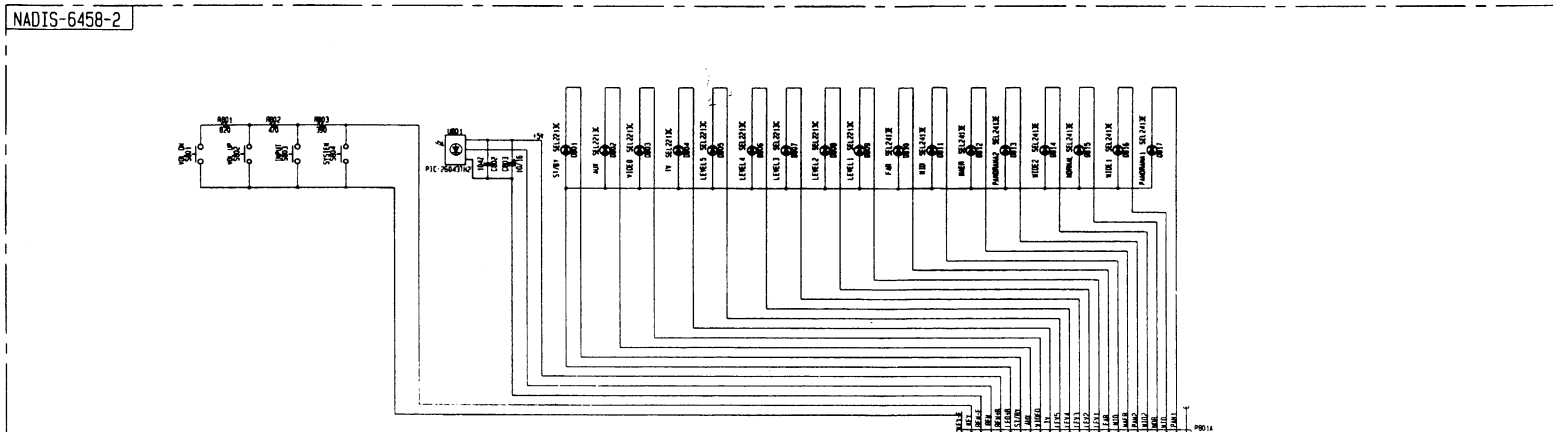
PHC-5 BLOCK DIAGRAM





### CHEMATIC DIAGRAM





## PARTS LIST (PHC-5SW)

REF.No.	PART No.	DESCRIPTION
A01	27160426	(SUB) Heat sink
A02	801433	3SMS8W.SW+14B(BC) Tapping screw
A03	27141729	(S) Retainer
A04	838130088	3TTB+8B Tapping screw
A05	27141730	(PWB) Retainer
A06	28175246	ISO Plate
A07	27160425	(MAIN) Heat sink
A08	830440109	4TTC+10C(BC) Tapping screw
A09	838430088	3TTB+8B(BC) Screw
A10	834430108	3TTS+10B(BC) Tapping screw
A11	27301941	△ KITAGAWAKF-41 Cord bushing
A12	29360404	Label SN
A13	28110758	Cabinet AS
A14	260208	BINDER(CLAMPER)UL
A15	2009990522AUL	NSAS-4P0685 Socket AS
A16	2009990519UL	NSAS-2P0682 Socket AS
Q515	2203063 or 2202523 or 2202524 or 2202526 or	* 2SC5198-O or 2SC4468-O Transistor
Q515A	223021	* 2SC4468-Y or 2SC4468-P or 2SC5198-R
Q516	2203053 or 2202513 or 2202514 or 2202516 or	TBM-51W 9043 ISO sheet
Q516A	223021	* 2SA1941-O or 2SA1695-O Transistor
Q541	2202104 or 2202103	* 2SA1695-Y or 2SA1695-P or 2SA1941-R
Q951	2202754	TBM-51W 9043 ISO sheet
Q952	2202764	2SC3423-Y or 2SC3423-O Transistor
		2SD1266-P Transistor
		2SB941-P Transistor

REF.No.	PART No.	DESCRIPTION	
R602	4000144	PTH9M04-2.2K Thermistor	
S901	25065571	△ NRC-002 Power switch	N
N T901	2301367	△ NPT-1352D Transformer	N
F904	252159	△ 2A·UL/T-237 Fuse	
N P901	253272HIT	△ AS-UC-6#18 AC cord	
A20	27122526A	Rear panel	N
A21	28141385	(AC) Cushion	N
A22	28141381	K t1*235*5 Cushion	N
A23	28141382	L t1*285*5 Cushion	N
A24	835430108	3TTF+10B(BC) Screw	N
N A25	W16117B	Woofer	
A26	27175382	Bottom leg	N
N A27	8381351644	3.5STB+16A(BC) screw	
A28	28120384	Net	N
N A29	28141386	Cushion(Urethane resin)	N
N A30	28141383	Cushion	
U01	1S211535-1A	NAAF-6435-1A Main amplifier circuit PC board	N
U02	1S211536-1A	NAAF-6436-1A Input Circuit PC board	N
U03	1S211537-1A	NAETC-6437-1A Transformer PC board	N
U04	1S211538-1A	NAETC-6438-1A Fuse PC board	N
U05	1S211541-1A	NAETC-6441-1A Protect PC board	N

NOTE: Replacement of the transistor of mark \*, if necessary, must be made from the same beta group (HFE) as the original type.

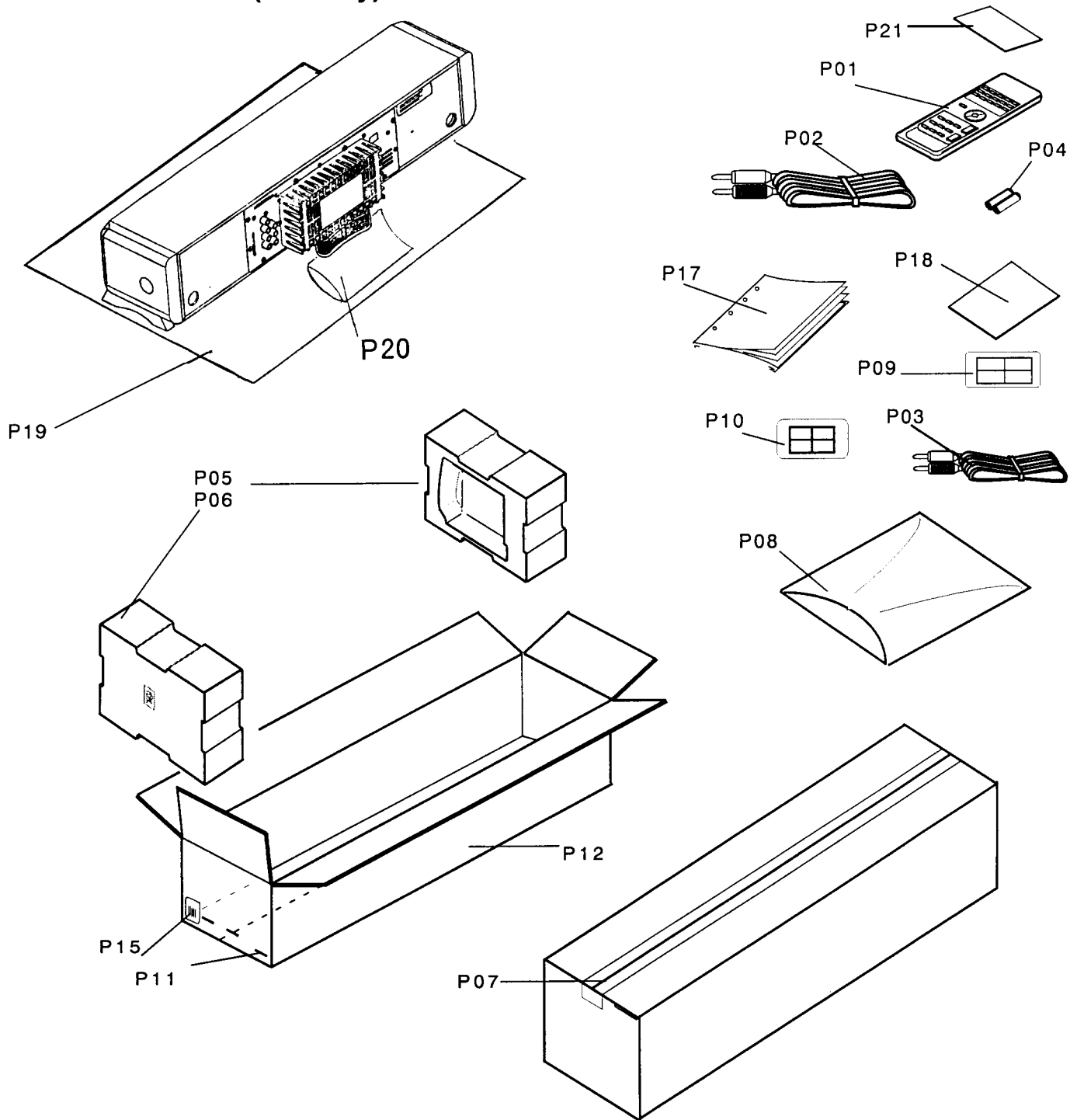
NOTE: THE COMPONENTS IDENTIFIED BY MARK  
△ ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK. REPLACE ONLY WITH  
PART NUMBER SPECIFIED.

# MICROPROCESSOR TERMINAL DESCRIPTION

Q852:μPD7801

PIN No.	SYMBOL	DESCRIPTION	PIN No.	SYMBOL	DESCRIPTION
1	P30/TO0	Not used.(Connect to ground)	33	P66/~WAIT	System power supply control pin. (Power ON ="H")
2	P31/TO1	Not used.(Connect to ground)	34	P67/ASTB	Speaker relay control pin. (Relay ON ="H")
3	P32/TO2	Not used.(Connect to ground)	35	~RESET	Input pin for reset control.
4	P33/TI1	Not used.(Connect to ground)	36	P00/INTP0/TI0	Input pin for remote control.
5	P34/TI2	Control BOOST circuit pin.	37	P01/INTP1	Detecting pin for protect signal.
6	P35/PCL	Clock output pin for electric volume control (TC9459)	38	P02/INTP2	Stoppage detection input pin.
7	P36/BUZ	Data output pin forelectric volume control (TC9459)	39	P03/INTP3	Connect to ground.
8	P37	Strobe output pin for electric volume control (TC9459)	40	VDD	Power supply. +5V
9	VSS	Ground pin	41	X2	Ceramic oscillator connection pins.
10	P40/AD0	Control pin for TC4052	42	X1	Ceramic oscillator connection pins.
11	P41/AD1	Select the TV position is "A=L", select the VIDEO position is "A=H"	43	IC	Testing pin. Connect to ground.
12	P42/AD2	Select the AUX position is "A=L" and STANDBY position is "A=H"	44	XT2	Not used. Connect to ground.
13	P43/AD3	Control pin for LED indicate. When PANORAMA mode is "H" (EXPAND mode)	45	P04/XT1	Not used. Connect to ground.
14	P44/AD4	Control pin for LED indicate. When WIDE position="H" (EXPAND mode)	46	AVSS	Connect to ground.
15	P45/AD5	Control pin for LED indicate. When NORMAL position="H" (EXPAND mode)	47	P10/ANI0	Key input pin.
16	P46/AD6	Control pin for LED indicate. When WIDE position="H" (EXPAND mode)	48	P11/ANI1	IPM signal detection pin.
17	P47/AD7	Control pin for LED indicate. When PANORAMA position="H" (EXPAND mode)	49	P12/ANI2	
18	P50/A8	Control pin for LED indicat. When NEAR position ="L" (DISTANCE Mode)	50	P13/ANI3	Not used. Connect to ground.
19	P51/A9	Control pin for LED indicat. When MID position ="L" (DISTANCE Mode)	51	P14/ANI4	Not used. Connect to ground.
20	P52/A10	Control pin for LED indicat. When FAR position ="L" (DISTANCE Mode)	52	P15/ANI5	Not used. Connect to ground.
21	P53/A11	LED indicate level control pin for mastet level, subwoofer level and surround lev	53	P16/ANI6	Not used. Connect to ground.
22	P54/A12	LED indicate level control pin for mastet level, subwoofer level and surround lev	54	P17/ANI7	Not used. Connect to ground.
23	P55/A13	LED indicate level control pin for mastet level, subwoofer level and surround lev	55	AVDD	Reference powe supply for A/D converter.
24	VSS	Ground terminal	56	AVREF	Reference powe supply for A/D converter.
25	P56/A14	LED indicate level control pin for mastet level, subwoofer level and surround lev	57	P20/SI1	HREQ pin for microprocessor(DSP56004).
26	P57/A15	LED indicate level control pin for mastet level, subwoofer level and surround lev	58	P21/SO1	MOSI pin for microprocessor(DSP56004).
27	P60	Input selector pin. When TV position is "L"	59	P22/~SCK1	SCK pin for microprocessor(DSP56004).
28	P61	Input selector pin. When Video position is "L"	60	P23/STB	SS pin for microprocessor(DSP56004).
29	P62	Input selector pin. When AUX position is "L"	61	P24/BUSY	RESET pin for microprocessor(DSP56004).
30	P63	Standby LED control pin. When standby position is "L"	62	P25/SI0/SB0	Reset pin for CS4222.
31	P64/~RD	Front speaker mute control pin. (muting ON ="L")	63	P26/SO0/SB1	Not used. Connect to ground.
32	P65/~WR	Subwoofer mute control pin. ( Mute ON ="L")	64	P27/~SCK0	Not used. Connect to ground.

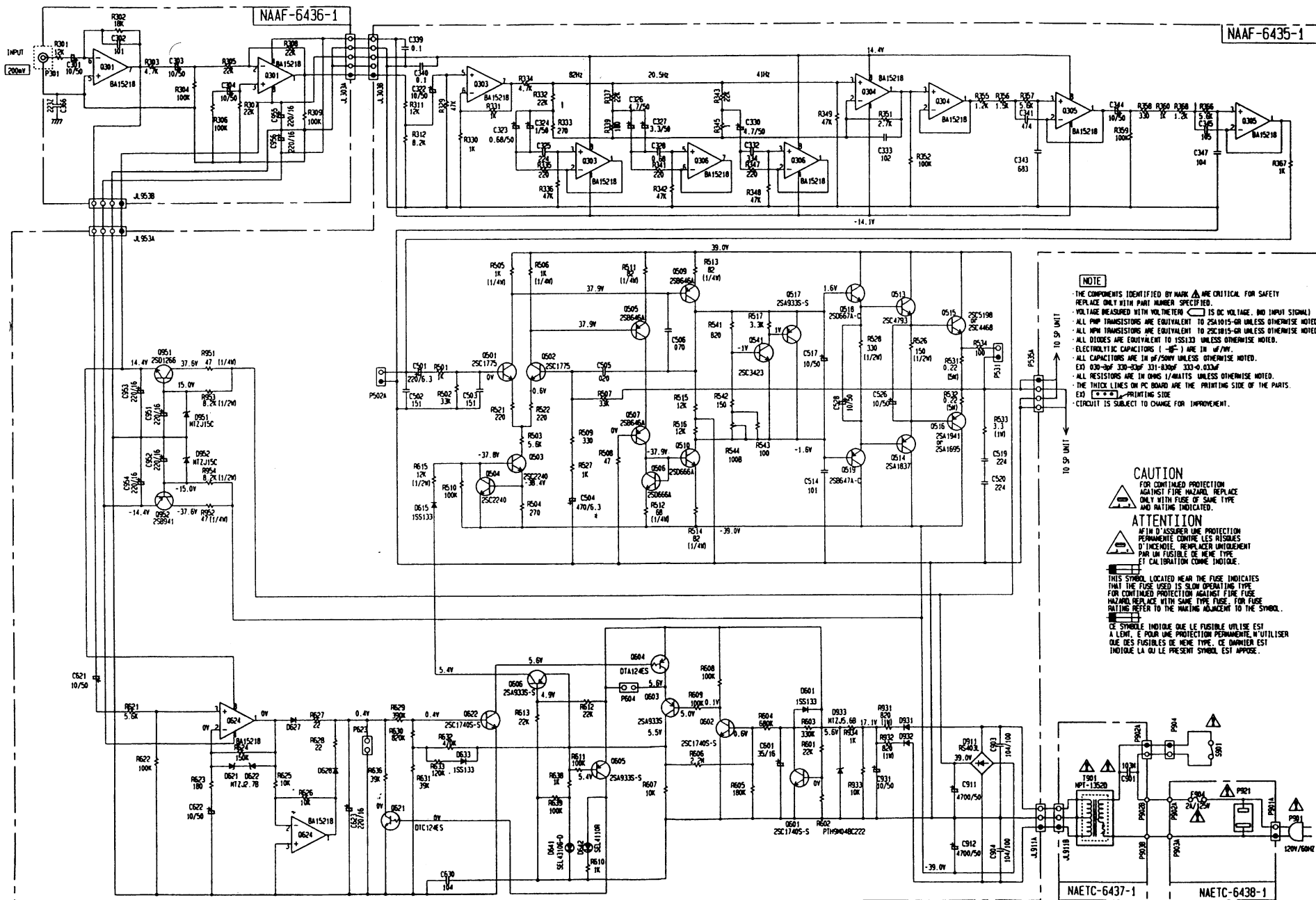
## PACKING VIEW (MP only)



## PACKING PARTS LIST(MP only)

REF.No.	PART No.	DESCRIPTION	REF.No.	PART No.	DESCRIPTION	
P01	24140382	RC-382M Remote control unit	P10	29110140	3M VHB Tape	
P02	2010369	Pin cord AS 1.5	P11	282321	Staple	
P03	2010197	PIN-CORD	P12	29053395	Carton	N
P04	3010194	Battery UM-3	P15	29362406	EAN code Label	N
P05,P06	29091863A	Pad AS	P17	29342676	E(PHC-5P) Instruction manual	N
P07	29110071	SOP-400 PP tape	P18	29342677	U6(PHC-5) Instruction manual	N
P08	29100097-1A	350*250 Polystyrene bag	P19	29095851	Sheet 820 x 820 Mirror mat	N
P09	29091864	(LEG) Pad	P20	29100040	Polystyren bag	
			P21	29355303	U7(PHC-5) Instruction sheet	N

# CHEMATIC DIAGRAM



# PARTS LIST(PHC-5SW)


CIRCUIT No.	PART No.	DESCRIPTION
<b>Main amplifier circuit PC board (NAAF-6435)</b>		
	<b>ICs</b>	
Q303-Q306,Q624	22240111	BA15218
	<b>Transistors</b>	
Q501,Q502	2215116 or 2215115	2SC1775-F or 2SC1775-E
Q503,Q504	2211406	2SC2240-BL
Q505,Q507,Q509	2215133	2SB646A-C
Q506,Q510	2215153	2SD666A-C
Q513	2202800	2SC4793
Q514	2202790	2SA1837
Q517	2213355	2SA933S-S
Q517A	79030	UL TUBE 6.5TRS#2
Q518	2215163	2SD667A-C
Q519	2215173	2SB647A-C
Q601,Q602,Q622	2213285	2SC1740S-S
Q603,Q605,Q606	2213355	2SA933S-S
Q604	2212600 or 2213580	DTA124ES or RN2203
Q621	2213160 or 2214220	DTC124ES or RN1203
	<b>Diodes</b>	
D601,D615,D627,	223163 or 223205	1SS133 or 1SS270A
D621,D622	224470272	MTZJ2.7B Zener
D628,D633,D931,	223163 or 223205	1SS133 or 1SS270A
D641	225292D	SEL4310G-D LED
D642	225290	SEL4110R LED
D911	22380021	RS403L
D932	223163 or 223205	1SS133 or 1SS270A
D933	224470562	MTZJ5.6B Zener
D951,D952	224471503	MTZJ15C Zener
	<b>Capacitors</b>	
C322,C344,C517,	354781009	CE04W50V-10M Electric.
C323	354786899	CE04W50V-0.68M
C324	354780109	CE04W50V-1M Electric.
C325,C519,C520	374722244	ECQ-V50V-224J Plastic.
C326,C330	354780479	CE04W50V-4.7M Electric.
C327	354780339	CE04W50V-3.3M Electric.
C328	374726844	ECQ-V50V-684J Plastic.
C332	374723344	ECQ-V50V-334J Plastic.
C333	374721024	ECQ-B50V-102J Plastic.
C339,C340,C347,	374721044	ECQ-V50V-104J Plastic.
C341	374724744	ECQ-V50V-474J Plastic.
C343	374726834	ECQ-V50V-683J Plastic.
C345	374721054	ECQ-V50V-105J Plastic.
C501	354722219	CE04W6.3V-220M
C502,C503	374721515	ECQ-V50V-151K Plastic.
C504	354724719	CE04W6.3V-470M
C526,C528,C621,	354781009	CE04W50V-10M Electric.
C601	354763309	CE04W35V-33M Electric.
C622,C931	354781009	CE04W50V-10M Electric.
C623,C951-C954	354742219	CE04W16V-220M Electric.
C630	374721044	ECQ-V50V-104J Plastic.
C903,C904	374731044	ECQ-V100-104J Plastic.
C911,C912	3504349	CE69W50V-4700M
	<b>Resistors</b>	
R505,R506	415421023	R25G-1K Carbon R. 0.25W
R508	415424703	R25G-47 Carbon R. 0.25W
R511,R513,R514	415428203	R25G-82 Carbon R. 0.25W
R512	415426803	R25G-68 Carbon R. 0.25W
R526	443521514	RS1/2WBJ-150 Metal oxide
R528	443523314	RS1/2WBJ-330 Metal oxide
R531,R532	4500018	BPR58FK-0.22 Metal
R533	453630334	RNU1WCJ-3.3 Metal
R544	5210359	N06HR100BC Trim
R615	443521234	RS1/2WBJ-12K Metal
R931,R932	443628214	RS1WBJ-820 1W Metal
R934	443521024	RS1/2WBJ-1K Metal oxide
R951,R952	415424703	R25G-47 Carbon R. 0.25W
R953,R954	443528224	RS1/2WBJ-8.2K Metal

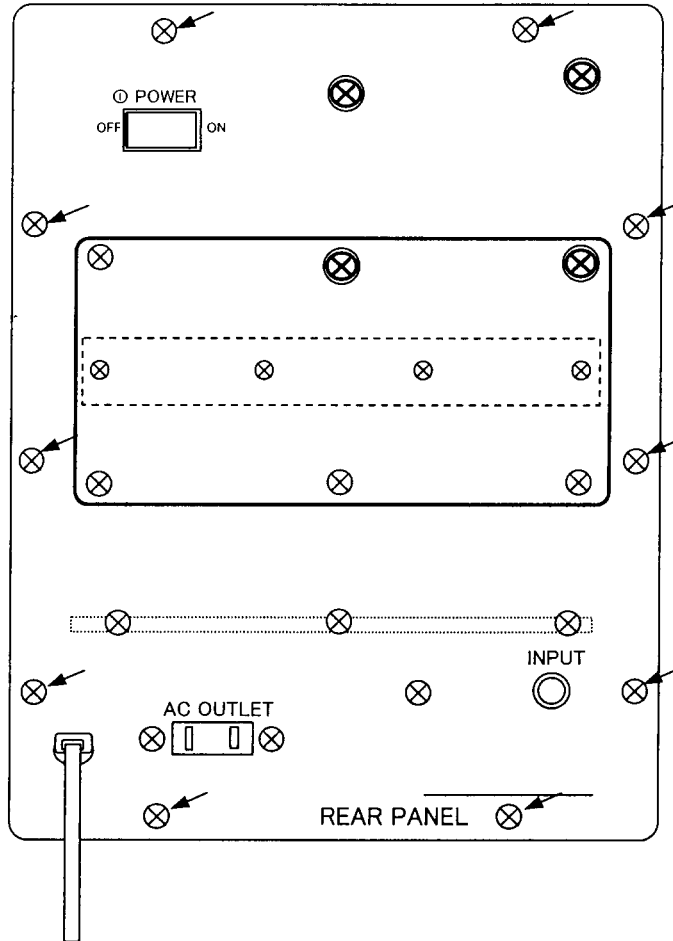
CIRCUIT No.	PART No.	DESCRIPTION
	<b>Fuse holder</b>	
F904A	25050065	YSH403T
	<b>Others</b>	
JL303	5J200606H	JL5 200 H Jumper lead
JL953	4J250606H	JL4 250 H Jumper lead
JL911	3J400606H	PVC Jumper lead
JL911A	25051107	NSCT-3P894 Wire holder
JL953A	25051108	NSCT-4P895 Wire holder
JL303B	25051109	NSCT-5P896 Wire holder
P301	25045535 or 25045302	NPJ-1PDBL359 or NPJ-1PDBL161 Jack
P502A	25055132	NPLG-2P116 Plug
P531	25055038	NPLG-2P29 Plug
P535A	25055167	NPLG-4P151Plug
P604,P623	25055038	NPLG-2P29 Plug
P901A	25060092	NTM-1S33 Terminal
P921	25051990	△ NSCT-2P1777AC outlet
E301	25065425	Terminal M3
E810	27141059	Retainer (Ground)
E811,E812	260224	CP-1S
E813	27190608-1	UA-0 V0 Holder
<b>Input Circuit PC board (NAAF-6436)</b>		
	<b>ICs</b>	
Q301	22240111	BA15218 IC.
	<b>Capacitors</b>	
C301,C303,C30	354781009	CE04W50V-10M Electric.
C955,C956	354742219	CE04W16V-220M Electric.
	<b>Others</b>	
JL303A	25051109	NSCT-5P896 Wire holder
JL953B	25051108	NSCT-4P895 Wire holder
<b>Transformer PC board (NAETC-6437)</b>		
	<b>Capacitors</b>	
C901	3500191	△ DE7150F-103M IS C
	<b>Others</b>	
C901A	27301216	△ SB1925A Capacitor cover
JL911B	25050267	NSCT-3P95 Socket
P904A	25055676	NPLG-2P632

## Fuse PC board (NAETC-6438)

NOTE: THE COMPONENTS IDENTIFIED BY MARK  
△ ARE CRITICAL FOR RISK OF FIRE AND  
ELECTRIC SHOCK. REPLACE ONLY WITH  
PART NUMBER SPECIFIED.

### PC board replacement

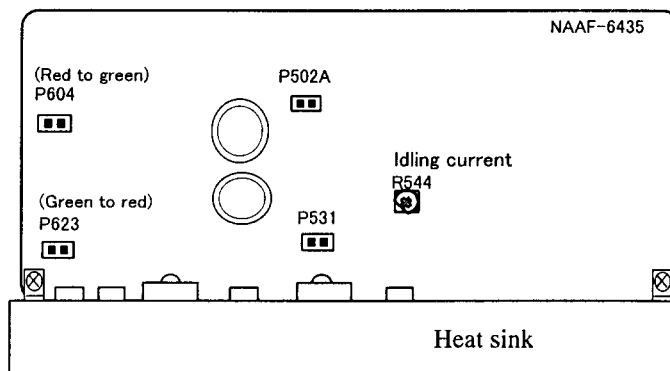
Remove 10 screws ( , and remove the main PC board.



### ADJUSTMENT OF IDLING CURRENT

Set the voltage at P531 to 6mV by adjusting R544 after 5 minutes heat running.

Condition: No load. No input signal.



### Confirming operating

#### 1) Auto power ON/OFF.

After 10 second when the input is no signal and power switch is on, shorting the P604, check the color of LED changes red to green.

When the unit is power on and the color of LED is green, shorting for p623, check the color changes green to red.



## Virtual Surround Technology Theater-Dimensional™ Surround

Onkyo R & D center introduced our original virtual surround technology called "Theater-Dimensional"™ Surround.



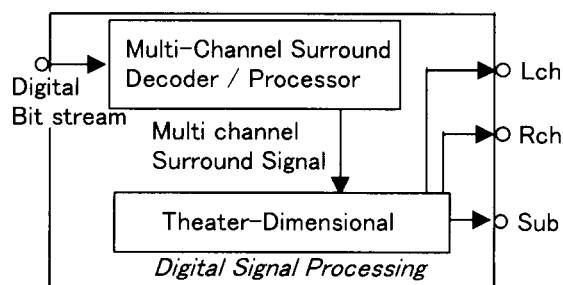
TM

The first research for the virtual sound was on the human ears. The human ears locate where the sound come from by analyzing the difference of arrival time and level difference of the sound wave to left and right ears. This characteristic of our ears is applied in the algorithm of the virtual sound technology.

The algorithm is programmed to the DSP (Digital Signal Processor). The multichannel surround sound, Dolby Digital for example, signal is processed to 2-channel sound by the DSP. There are only 2 speakers set up, but the listener in the certain area called "sweet spot" can hear the sound from the virtual surround speakers.

**Theater-Dimensional** Surround can locate 2 virtual surround speakers both sides of the listener. The advantage of the virtual surround saves cost and space for the surround speakers. It can be said that **Theater-Dimensional** Surround is good for personal use.

**Theater-Dimensional** Surround is licensed as a Virtual Dolby Digital by the Dolby Laboratories. Prototype was introduced in the Audio Fair '97 in Japan and Winter CES in the USA. The quality is already known for one of the best in the industry. **Theater-Dimensional** Surround will be applied mainly to the Onkyo future products.



Block diagram of "Theater-Dimensional"

## Advantages

### Virtual Surround Speakers

Most of conventional virtual surround can locate virtual speakers about 120 degrees from the front center. However, as shown in the figure 2, the listener might locate the virtual speaker about 60 degrees from the front center. It happens because the arrival time of the sound is almost same for above two conditions.

On the other hand, **Theater-Dimensional** Surround locate the virtual speakers directly to right and left side of the listener as shown in figure 1. By applying this method, the listener can hear better surround effect than conventional virtual surround.

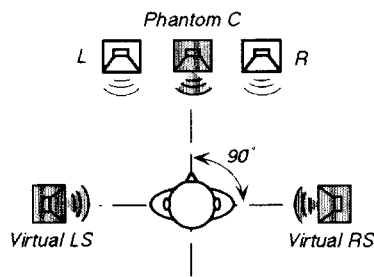


Fig.1 Theater-Dimensional

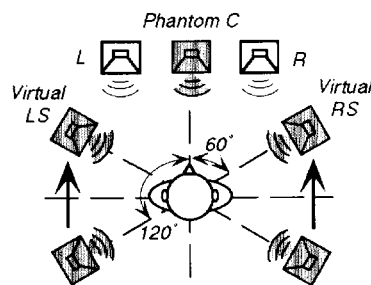


Fig.2 conventional virtualizer

### Monaural Surround Spaciousness

When the surround channels were monophonic like Dolby Pro Logic, the listener locate at the center. If you hear the identical sound from 2 channels, you feel the sound is located in your head. (Just like when you listen the music with your head phone set) When it comes to the virtual surround, it is very critical. In the **Theater-Dimensional** Surround processing, there are our original algorithm to remain spacious. Even for the Dolby Digital sound source ( sometimes signals of surround channels are substantial monaural), this algorithm is applied.

### Widening the Front Sound Field

When the distance between front 2 speakers is not enough to get surround field, **Theater-Dimensional** surround processor can widen the front sound field.

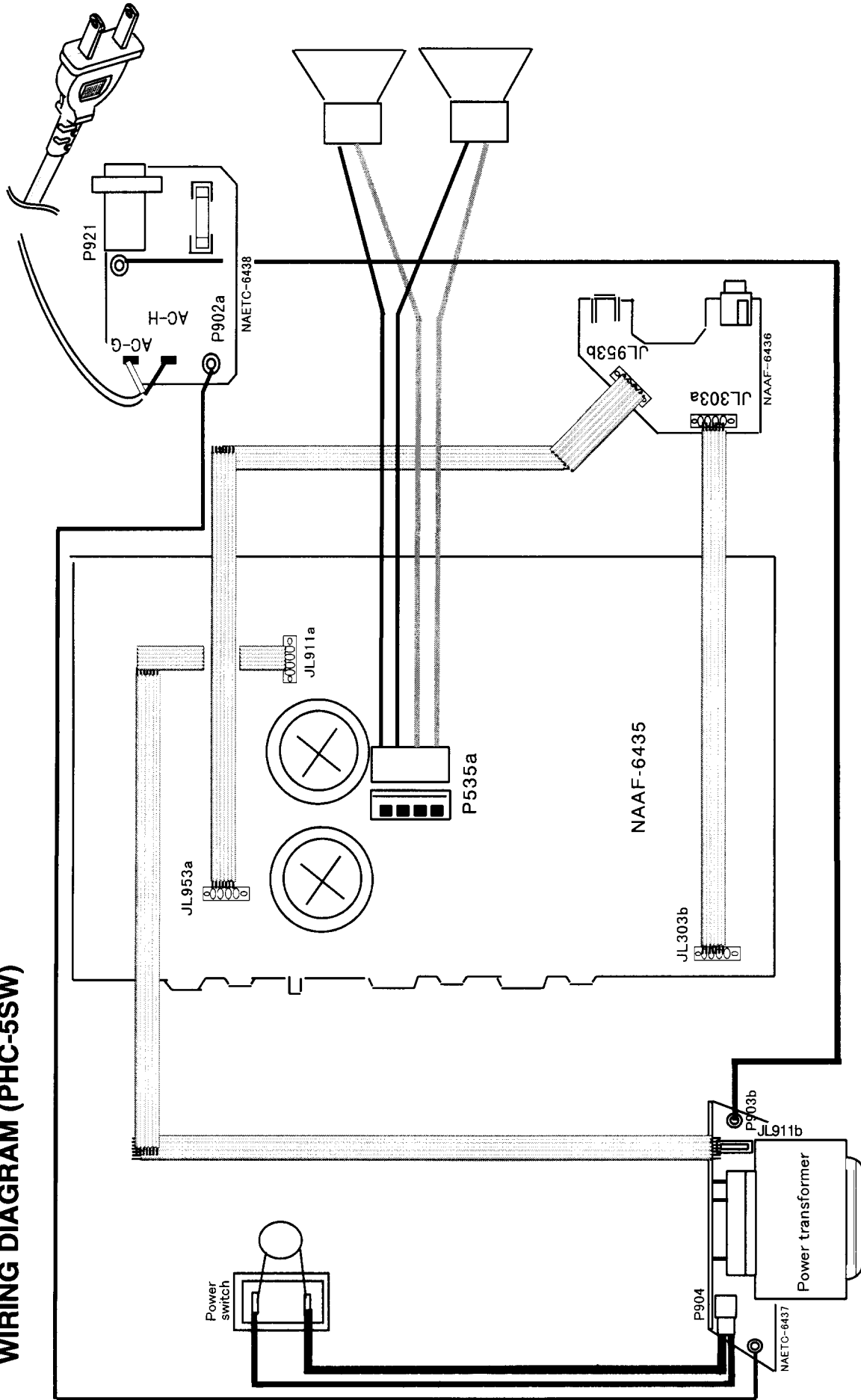
### Flexibility for various conditions

The effect of the virtual surround requires appropriate speaker setting. However, in the actual listening room, the condition ( distance between front 2 speakers ,and distance between speakers and listener ) varies. For those listeners, There are the flexibility in **Theater-Dimensional** surround set up parameters for the optimam virtual surround effect.

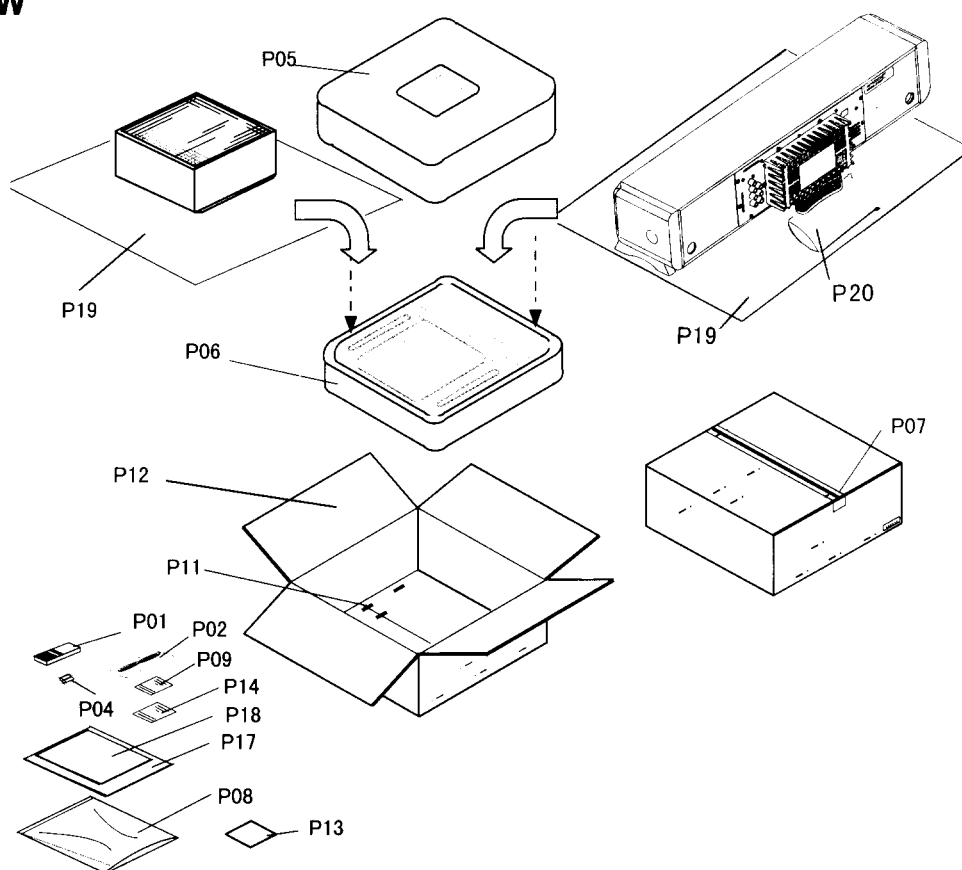
\* "Dolby" and "Pro Logic" are trademarks of Dolby Laboratories Licensing Corporation.

\* "Theater-Dimensional" is trademark of ONKYO Corporation.

# WIRING DIAGRAM (PHC-5SW)



## PACKING VIEW



## PACKING PARTS LIST

REF.No.	PART No.	DESCRIPTION		REF.No.	PART No.	DESCRIPTION	
P01	24140382	RC-382M Remote control	N	P11	282321	Staple (10 PCS)	
P02	2010197	Pin cord AS		P12	29053366	Carton	N
P03	2010369	( 1.5) Pin cord AS	N	P13	29365019	Warranty card	
P04	3010194	Battery UM-3 x 2		P14	29358002	Service station list	
P05	29091867	(U) Pad	N	P15	29362371	(UPC)AS Label	N
P06	29091868	(D) Pad	N	P16	29362393	(FCC) Label	N
P07	29110071	SOP-400(CLEAR50MT) Plastic tape		P17	29342632	E(PHC-5) Instruction manual	N
P08	29100097-1A	350*250 Polystyrene bag		P18	29355298	E(PHC-5) Instruction sheet	N
P09	29091864	(LEG) Pad		P19	29095848	Sheet (820 x 820 x 0.5)	N
P10	29110140	3M VHB Tape		P20	29100040	Polystyrene bag	

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